REMARKS

Upon entry of the above amendment, the claims will be 1 to 3 and 7 to 18 with claims 7 to 18 being withdrawn from consideration.

The above amendment recites that in the reaction forming the epoxy resin curing agent presently claimed, the reaction is conducted under the conditions wherein the reaction molar ratio of aliphatic diamine to styrene is 1:1.

The significance of the amendment is as follows:

In the Official Action dated October 11, 2007, claims 1 to 3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yonehama et al. (U.S. 6,562,934) in view of CAPLUS accession no. 1990:425027 for the Kobunshi Ronbunshu article by Tanaka et al. and European Patent No. 477,440.

The rejection contends that Yonehama et al. recognizes the reaction of a high proportion of alkenyl compound relative to the diamine of formula (1) results in a smaller amount of unreacted diamine and therefore concludes it would have been obvious to reduce the content of unreacted diamine by conducting the reaction with a high proportion of styrene relative to the diamine.

In reply, in above amended claim 1, the reaction molar ratio (= aliphatic diamine: styrene) is 1:1.

In Yonehama et al., in contrast, in order to reduce the content of unreacted diamine, it is necessary to conduct the reaction with a high proportion of styrene relative to the diamine. On the other hand, in the present invention, it is possible to obtain a reaction product reacted with reaction molar ratio of 1:1 (=aliphatic diamine: styrene) wherein the amount of unreacted diamine is less than 2% by weight.

The reaction product of 1:2 with unreacted diamine of less than 2% by weight as in Example 2 of Yonehama cannot provide an epoxy resin curing agent excellent in low-temperature curability in combination with the curing accelerator.

In order to demonstrate this fact, applicants have conducted the following experiment in the enclosed Rule 132 Declaration:

<Experiment>

An experiment is conducted in the same manner as Example 1 of the present application, except for the fact that the reaction proportion of MXDA:styrene is changed to 1:2. The amount of unreacted diamine is less than 2% by weight.

The reaction product thus obtained is the same as Example 2 of Yonehama wherein the reaction molar ratio is 1:2 and the amount of unreacted diamine is less than 2% by weight.

The properties of the epoxy resin cured coating film are evaluated in the same manner as the Examples of the present invention and as a result, it is shown that the curability at a low temperature is deteriorated when the reaction is conducted with a high proportion of styrene relative to the diamine.

When the reaction proportion of styrene relative to the diamine is high, the number of active hydrogen atoms in an amino group becomes small which causes an addition product having three or more of active hydrogen atoms being rarely produced.

This means that the addition product cannot be effectively used as an epoxy resin curing agent.

In order to function as an epoxy resin curing agent, it is necessary for the addition product to react with epoxy groups of the epoxy resin to form a three-dimensional structure. However, the addition product having a small number of active hydrogen atoms produced by the reaction with high reaction proportion of styrene cannot react with epoxy groups of the epoxy resin to form a three-dimensional structure sufficiently and the cured product thus obtained has extremely deteriorated properties.

Therefore, in order to maintain favorable functional properties as an epoxy resin curing agent as well as to reduce the above-mentioned disadvantages of having a high amount of unreacted diamine, it is necessary to conduct the addition reaction with the reaction proportion of diamine : styrene = 1:1 and to reduce the unreacted diamine less than 2% by weight after completion of reaction.

The above experimental data clearly demonstrates that the addition reaction product of diamine and styrene with the reaction proportion of 1:2 having the amount of unreacted diamine less than 2% by weight as described in Yonehama is inferior in a low-temperature curability.

Therefore, it is clear that the epoxy resin curing agent of the present invention obtained by the addition reaction of diamine and styrene with the reaction proportion of 1:1 having the amount of unreacted diamine less than 2% by weight, is not disclosed or suggested by Yonehama and has an unexpected technical effect.

None of the secondary references overcome this significant deficiency of Yonehama et al.

Accordingly, the present claims are unobvious from the combined reference teachings.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

Hisayuki KUWAHARA et al.

By: _____

Matthew M. Jacob
Registration No. 25,154
Attorney for Applicants

MJ/aas
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
October 26, 2007